Belgian digital cities

d'Udekem-Gevers, Marie

Published in:
Preceedings of HCC-5 Fifth World Conference on Computers and Networks in the Age of Globalization, 26-28 August 1998, Geneva

Publication date:
1998

Document Version
Publisher's PDF, also known as Version of record

BELGIAN 'DIGITAL CITIES': A SAMPLE OF FRENCH-SPEAKING WEBSITES

Marie d'Udekem-Gevers
Cellule Interfacultaire de Technology Assessment (CITA)
Facultés Universitaires Notre-Dame de la Paix,
Namur, Belgium

Abstract

This paper reports on research into 'digital cities' within French-speaking Belgium. A 'digital city' is defined as a set of web pages which are realised in the framework of a city (or a commune). Data from 37 websites were collected in September 1997 and analysed according to context; technical modes of functioning; information; and communication. Detailed results are presented. Specific findings are that the interactivity of the sites is generally very low, and the websites are not well enough advertised. At the generic level, this paper suggests a basic framework to analyse 'digital cities'.

1. INTRODUCTION

The usual metaphor of 'digital cities' is used in the title of this paper, but this does not prevent us from asking questions about this vocabulary. What does it mean? What is the reality or, more exactly, the realities behind this metaphor and its synonyms ('virtual cities', 'telecities'.. (Graham & Marvin 1996 p. 9)) ? There is no clear definition in the literature. Here it will be assumed that *a set of web pages which are realised in the framework of a city (or a commune*[1]) can be called a 'digital city'. This pragmatic definition[2] highlights that the World Wide Web is now a dominating service (see Graham & Aurigi 1997 p. 34). Of course, it is distinct from the old 'telecities'[3] implemented before the WWW was available (see, for example, the so called 'Free-Nets' as described by (Beamish 1995 pp. 5-20)). Moreover, it could be considered as minimal. Indeed it does not mention other Internet services (e-mail, news, etc.) which can be offered from these web pages nor other elements which can be included in the framework of a 'digital city' (public access kiosks, Intranet[4], etc.).

The phenomenon of the 'virtual cities' is not yet well studied, but it could be a very promising usage of new information and communication technologies and thus deserves careful attention.

Currently in Belgium, it seems that a multitude of 'digital cities' have been created. According to the unpublished exhaustive study by a consultant of the firm 'Paradigm' (see Pâques 1997), 193 of the 589 Belgian communes

were already on the web in 1997. On the other hand, the phenomenon of 'digital cities' is quickly evolving in this country: during the short period of the present study, changes and even reorganisations were observed.
This analysis concerns a sample of 37 French-speaking websites devoted to cities or communes of the Walloon and Brussels regions during summer 1997 (see appendix). Projects which were not yet implemented at this time were not included. The study focuses only on information and services for private individuals (i.e. not for private companies).

The websites in the sample were found in lists of Belgian 'digital cities' available on the Internet[5]. The study is based on what could be directly observed on the websites themselves. (As a rule, what could be reached from the site via hyper-links was not taken into account.) Often more information was obtained from the people in charge of a website, via e-mail exchanges or telephone calls. In order to manage the quick evolution of the Belgian 'digital cities', the period of the analysis was strictly limited to July and August 1997 and all the electronic information sources were printed on sheets and stored in permanent files. The studied sites are defined on the basis of their URL (Uniform Resource Locator) address. Several websites can be implemented in the framework of the same city or commune. For this reason, only 26 cities/communes are involved in the sample.
There were two aims of our analysis. The first was to establish a basic classification and, consequently, to suggest a framework which could be used when analysing other 'digital cities' (generic goal). The second was to better understand the phenomenon of 'digital cities' in the South and central parts of Belgium (specific goal). This, in turn, could give food for thought concerning future studies and, perhaps, political strategies.

2. GENERIC RESULTS

At the generic level, we suggest a grid of analysis with four main topics: context; technical modes of functioning; information and communication.

The first two parts of this classification concern the *framework* of the sites. The last two categories put together what is offered to the users and deal thus with the real *content*. These main parts are in turn subdivided as described below. For each of the final subdivisions, a detailed table giving the observations in each website could be created to perform an analysis.

2.1 Context

At the level of the context of any website devoted to a city/commune, the available information about *supplying* and global *use* of the site has to be distinguished.

On the one hand, several actors can be involved in supplying the site. Thus it is important to make a clear distinction between the initiator (i.e. the person or body who has got the idea to create the site)[6], the editor (i.e. the person or body who is responsible for the content), the designer (i.e. the person or body who has implemented the site) and the person or the body financing the site: it sometimes happens that these four functions are realised by four different entities. Moreover, partners can also intervene, for example in the furnishing of information. The content editor could be considered as the key person/body. If the authorities of the commune are in charge of the content, the site is usually described as 'official'. These official sites deserve particular attention: as pointed out by d'Iribarne (1997 p. 10), they can give a new role to the municipalities. In Belgium, they generally have got their own domain name (see appendix). This means that their address is of the type: 'name of the city/commune.be[7]'.

It is interesting to point out the links between the content editor and other observations such as the specific goal in making the site, presumed target population, available language(s) or the identity of other actors.

On the other hand, the frequency of use can be appreciated by comparing the value of the visitor counters (if available) and the date of creation of the site.

Finally, the suggested break-down of the context is as follows:

1. URL of the site with their own domain name and/or the other domain names used (see examples in the appendix);
2. initiator, editor of the website and general goal of this editor;
3. editor of the website and his specific goal, presumed[8] target population of the site and available language(s);
4. editor of the website and technical designer;
5. editor of the website, partners and body/person in charge of financing;
6. date of creation of the site and figure in the visitor counter.

2.2 Technical modes of functioning

Regarding the technical modes of functioning of the websites dedicated to a city or a commune, they could be broken down as follows:

1. Technical infrastructure (*sensu lato*)
   - 1.1 protocol used
   - 1.2 hosting server
   - 1.3 available facilities (Intranet, public access kiosks, etc.).
2. Facility of use
   - 2.1 user-friendliness
   - 2.2 dysfunctions (defective e-mail, not found hyperlinks,etc.).

2.3 Information

We suggest that the pieces of information given on the websites are first divided into their different 'domains' (such as, for example, 'administrative information', 'promotion of the city/commune', etc.). Each domain can be in turn sub-divided in three components:

- available information 'fields' (i.e. sub-domains) (which can be themselves split into 'sub-fields' and then into 'topics');
- interactive services;
- offers of hosting.

2.4 Communication

The category entitled 'communication' includes the exchange between users via a forum. Let us remark that the frequency of e-mails between users cannot been analysed with the methodology used in this paper.

Moreover, it was arbitrarily decided to put here also the communications with the editor or the designer. (But any electronic exchange related to one domain as defined above has to be included in the corresponding interactive services.)

2.5 Remarks

This suggested classification should be considered as a core, to be extended and adapted according to new developments of 'digital cities' and additional information from other sources (for example, the results of user interviews).

On the basis of this grid, the degree of *interactivity* of a website, which seems to be a rather ambiguous concept in the literature on 'digital cities', can be judged from the space devoted *to interactive services, to offers of hosting and to communications*.

Another classification which can be used for 'digital cities, at both the level of context and the level of content, is given by Beamish in the second chapter of her thesis. Other typologies of website content only can be found in d'Iribarne (1997 pp. 11-13) and Graham & Aurigi (1997 p. 63) but they exclusively concern official sites.

3. SPECIFIC RESULTS

In the 'specific' framework of the sample, the main observations are presented next.

3.1 Context

First of all, let us look to the available data linked with the context of the websites. From the table given in the appendix, let us remark that the sample includes 9 'official'[9] sites (with their own domain name)[10]. For 4 of these sites, the authorities of the city or commune are both the editors and the initiators (see table 1). But for the majority of them, the idea of creating a website has been suggested by an Internet provider.

Table 1 shows that 9 sites are edited by Internet providers[11] who are also the initiators. Let us remark that one of these sites is also under the responsibility of a trade association.

Moreover, private individuals are responsible for 6 websites and non-profit associations for 6 others (among which there are two computer scientists' clubs). Half of the sites of non-profit associations have been put forward by an Internet provider.

Table 1 indicates also that 5 sites of the sample are edited by firms specialised in tourism. Let us add that the last 2 sites of the sample have, respectively, a university and an Economic Chamber as editor and that the latter was suggested by a private individual.

To sum up, 9 websites of the sample have an initiator different from the editor.

Table 1. Identification of the editor and of the initiator

Editor(s)	Number of websites	Initiator (if *different* from editor)	Number of websites
Authorities of the city or commune	9	Internet provider	5
Internet provider	8		
Internet provider + trade association	1		
Private individual	6		
Non-profit association	6	Internet provider	3
Firm specialised in editing tourist sites	5		
University	1		
Young Economic Chamber	1	Private individual	1
	Total = 37		Total = 9

The question is now: what are the declared aim(s) of these editors when they become in charge of a site? The goals of the authorities of the city or commune in official sites are generally to improve their services, promote the city/commune and provide a model for other cities/communes. As to the Internet providers, they say they hope to make publicity and to reach new customers in this way. Private individuals become editors of website usually because of a passion. And firms become specialised in editing tourist websites dedicated to cities or communes in order to answer a potential demand. The goals of non-profit associations when editing a site in the framework of a city or a commune are various. Several are interested in giving their members (or trainees) the opportunity of becoming experienced in the design of websites.

For most of the sites included in the sample, the editor is also the technical designer. But when the authorities of the city or commune are the editors, they need the help of an Internet provider (or of a specialised non-profit association) to implement the site. Let us mention also the case of one non-profit association who asked an university's service to design its site. As to the site of the Young Economic Chamber, it has been created by the same private individual who is the initiator. Thus, to sum up, 9 of the 37 sites have a technical designer different from the editor.

On the other hand, some partners who furnishing non-commercial information deserve to be mentioned. They are the authorities of the city or commune for one site edited by an Internet provider, one site of a private individual and three sites of one firm specialised in editing. They are also a Tourist Federation/Office (four sites of the same firm specialised in editing and one site of a non-profit association) and a local newspaper (in the same site of a non-profit association).

As to the modes of financing the studied websites, Table 2 (next page) shows that they are various. Two classes have to be taken into account: the financing of hosting or of the server, on the one hand, and the payment for design and maintenance, on the other hand. Most official sites in the sample found an external source of funding: Internet provider, intermunicipal firm, firms and shopkeepers, or publisher. Even one third of the sites with an Internet provider as editor (or co-editor) have obtained (partial or full) financing by firms and shopkeepers. One third of the sites of private individuals and half of non-profit associations are funded (by an Internet provider) but only for the hosting of their site. To complete the description of the modes of financing of the analysed sites, let us mention that a tourism firm is a sponsor for one site of a firm specialised in editing, that only the site of a Young Economic Chamber is fully supported by firms and shopkeepers present on the site, for the commercial part, and by the city, for the rest.

Unfortunately, the information about costs of such digital cities is usually confidential. The only evidence obtained in this survey about prices seems to indicate that they may not be so high: 190, 000 BEF (approx. 4,750 euro)

excluding VAT for the first year for hosting, design and maintenance plus translation into three languages , and then only 90,000 BEF (approx. 2,250 euro) excluding VAT for the following two years.
Let us remark that all of these websites are the result of local initiatives and are realised without any funding from the European Union[14].

To sum up, the analysis of available information in the studied sample about resourcing 'digital cities' shows that the facts are *completely heterogeneous*. It points out also several cases of a *spontaneous cooperation between private and public sectors*. Eventually, it reveals the *importance of the private individuals and of non-profit associations* in the spontaneous emergence of websites devoted to a city/commune.

Table 2. Identification of the body/person in charge of financing (according to the editor)

Editor (and corresponding number of sites)	**Body/person in charge of financing the hosting/server (if *different* from editor)**	**Body/person in charge of financing the design and the maintenance (if *different* from editor)**	**Number of websites**
Authorities of the city or commune (9)	• Internet provider • Intermunicipal firm financing partly • Internet provider • Publisher in return of ad for himself and for firms and shopkeepers	• Internet provider • Firms and shopkeepers in return of ad • Publisher in return of ad for himself and for firms and shopkeepers	1 1 1 2
Internet provider (8)	• Firms and shopkeepers • Firms and shopkeepers financing only commercial part	• Firms and shopkeepers • Firms and shopkeepers financing only commercial part	1 1
Internet provider + trade association (1)	• Firms and shopkeepers	• Firms and shopkeepers	1
Private individual (6)	• Internet provider		2
Non-profit association (6)	• Internet provider • Internet provider in return of ad		2 1
Firm specialised in editing tourist sites (5)	• Confidential information • (1 tourist attraction firm as a sponsor)	• Confidential information • (1 tourist attraction firm as a sponsor)	4 (1)[12]
University (1)	See note 13		

Young Economic Chamber (1)	• Firms and shopkeepers financing the commercial part and the city financing the rest	• Firms and shopkeepers financing the commercial part and the city financing the rest	1
(Total = 37)			Total = 18

Moreover, as judged by the number[15] of visitors (when counters exist), the websites dedicated to communes are not often used. This impression is corroborated for the site <namur.be/citoyen> by the results of an electronic interview conducted by Nguyen Nam and Rossetti di Valdalbero (1997).

3.2 Modes of Functioning

To summarise the modes of functioning, let us first remark that, in the studied sample, there is no example of huge investments in new infrastructure such as optical fibres with ATM protocol.

Moreover, only two cities, Namur (with 2 sites: www.namur.be and www.ciger.be) and Charleroi (with www.charleroi.be) assert they have an Intranet. And only one city (Namur) offers (2) kiosks for public access but, to say the least, they are infrequently used.

3.3 Information

Let us first remark that the classification of information into different domains and their sub-divisions (respectively called in this paper 'fields', 'sub-fields' and 'topics') the we suggest here has been performed dynamically: it has been adapted and corrected, step by step, when analysing the sample. Moreover it is, to some extent, subjective: it is only one of many possible typologies.

The most frequent domains of information we have identified in the sample are, in order:

- promotion of the city or commune;
- address directories;
- administrative data.

Moreover, pieces of information are also available about:

- education;
- libraries;
- media (press and others); and
- economic announcements.

The whole available information about the *city/commune promotion* can be broken down into the following fields (which are in turn subdivided into sub-fields): general presentation (see table 3), infrastructure (see table 4), culture (see table 5), and diaries (see table 6).

Table 3. City/commune promotion: the different sub-fields of the 'general presentation'

	Number of websites		
	Official (n=9)	Others (n=28)	Total (n=37)
General survey	4	12	16
Geographical situation	4	11	15
A few figures	2	4	6
Armorial bearings	3	3	6
Map of the city/commune	3	1	4
Folk/historical panorama	2	2	4
Cultural panorama	2	1	3
Economic survey	2	1	3
Culinary specialities		3	3
Available bibliography	1	1	2
Sports panorama	1		1
Plan of the city	1		1

Table 4. City/commune promotion: the different sub-fields of the 'infrastructure'

	Number of websites		
	Official (n=9)	Others (n=28)	Total (n=37)
Sports infrastructure	2	13	15
Accommodation/hotels	2	10	12
Restaurants/cafés	2	10	12
Cinemas/theatres	1	4	5
Shopping/markets		3	3
Reference library		3	3
Transport	1	1	2
Travel agencies		2	2

Table 5. City/commune promotion: the different sub-fields of 'culture'

	Number of websites		
	Official (n=9)	Others (n=28)	Total (n=37)
Museum/tourist attractions	6	20	26
Pictures	6	15	21
History/folk	5	12	17
Celebrities/artists	3	4	7
Walks	2	5	7
Cultural space/ association	2	3	5

Table 6. City/commune promotion: the different sub-fields of the 'diaries'

	Number of websites		
	Official (n=9)	Others (n=28)	Total (n=37)
Cultural/artistic diary	5	13	18
Other diaries	5	12	17

As to interactive services related to the city/commune promotion, they are only three. Their titles are: 'request for more information' from the 'Maison de la Poésie', 'comments' to the 'Maison de la Poésie' (both on www.ciger.be/namur) and 'request for including pictures' (on the website of Tournai). The offer of hosting is less frequent: only one site (Wavre) gives free pages to artists.

The *directories of addresses* can be classified into 'general interest addresses', 'commercial and/or professional addresses', 'local non-profit associations or organisations' and 'e-mail addresses' (see Table 7). The only interactive services offered in this domain which have been found in the sample are entitled: 'inclusion in a directory' (existing at the sites of Dinant, namur.be/citoyen and Tournai) and 'creating a free e-mail address on the server' (cf. namur.be/citoyen). Moreover paid hosting is proposed for firms and shopkeepers in Wavre and free hosting to non-profit associations in Liège and Wavre.

Table 7. Directories of addresses: the different fields

	Number of websites		
	Official (n=9)	Others (n=28)	Total (n=37)
General interest addresses	2	10	12
Commercial and/or professional addresses	4	6	10
Local non-profit associations or organisations	1	8	9
E-mail addresses	1	3	4

As to the '*administrative information*', its first field is the 'administration of the commune': the topics encountered in every administration[16] (see table 8) and also some specific topics which are underlined on certain websites (see table 9). Let us notice that, in the sample, only three different sites which are not official give such information.

Table 8. Administrative information: the different topics encountered in every 'administration of the commune'

	Number of websites		
	Official (n=9)	Others (n=28)	Total (n=37)
General affairs	3		3
Social affairs	6	1	7
Culture & tourism	5	1	6
Childhood: day nurseries & education	4	1	5
Environment	6	1	7
Registry office	6	1	7
Police, firemen & security	7	1	8
Population, foreigners, military service	6	1	7
Financial services	6	1	7
Sports, youth, liveliness, feasts	4	1	5
Works, town planning, land administration	6	1	7

Table 9. Administrative information: specific topics encountered in the 'administration of the commune'

	Number of websites		
	Official (n=9)	Others (n=28)	Total (n=37)
Quarters	1	1	2
Ombudsman	1	1	2
Arbitration	1		1
Problem of management of the external public space		1	1

This section is completed by information about the College of the deputy mayors (general data: setting-up [4 sites], individual data: allocation [9 sites], address of the office [4 sites], private address [6 sites]) and about the Council of the commune (general data: setting-up [5 sites], individual data: title [2 sites], political party [5 sites], private address [6 sites]). Let us remark that, in the sample, no personal[17] e-mail address is given for any member of the College, or of the Council or even of the administration. Moreover, the only interactive administrative service found is a form for asking authorisation for a dance (in namur.be/citoyen).

The other domains of information are infrequent in the sample. Information about '*education*' is available, without any interactive service or offer of hosting, on 8 sites (among which 7 are official). As to the data about '*libraries*', they are: address (3 sites), practical modes (2 sites), data about the collections (1 site), and catalogue (1 site). Linked with this domain, there are two interesting interactive services on the site www.namur.be: 'reserving a book' and 'sending an e-mail to the library'. The available information about *media* concerns essentially the press. It can be broken down as follows: articles (2 sites), files (1 site), archives (1 site), column (1 site), platform (1 site), press release (1 site), and various diaries (1 site). The three corresponding interactive services, again on www.namur.be only, are web forms (including free text) which are entitled: 'letters to the Editor', 'multimedia platform', and 'press release'. To complete this listing, let us mention that three studied sites offer *economic announcements*. Several fields, which are each met only once, are set in this domain: 'offers of collaboration', 'business for sale', 'premises to let', 'premises for sale', 'research of premises', 'information about natural gas', and 'evolution of the water price'.

3.4 Communication

The forums between users or the public notice boards are notably rare in the sample and poorly attended. Indeed only five sites offer this kind of public

discussion: one private site in Charleroi (ping.be/cyberbubu) which focuses on debates (with a trial of 'webzine' to be written by its readers and visited by 640 persons in 7 months, and a 'Webchat'), Dinant (with a 'Jobs service' including 5 notices only in July 97), namur.be/citoyen (with its 'Petites annonces' [55 messages in 2 months], 'Place publique' [6 messages in 2 months], comments on the server [41 messages in 2 months], and a discussion about a project of the Council of the commune [15 messages in one and a half month]), ciger.be/namur (with its notice wall) and Wavre (with its forum).

But the electronic way back (e-mail) to the editor or to the technical designer of the website nearly always exists.

3.5 Remark about the specific results

A quick supplementary research was made in summer 1997 by the author, into 'digital cities' which were not included in the sample but were also located in the Walloon or Brussels regions. It seems to indicate that the sample which is analysed here gives a good image of the whole population of French speaking websites dedicated to individual users within the framework of a city/commune for this period and in these regions. But this sample is not representative of the whole of Belgium. Indeed in the Flemish region, Antwerp appears as a leader in the process of the digital cities and deserves special attention. This city participates in several European networks (such as 'Telecities') and projects (such as the 'European Digital Cities [EDC]' project) linked with the information highways and has built its own ring of optical fibre with ATM (Metropolitan Area Network Antwerp [MANAP]).

4. CONCLUSION AND DISCUSSION

At the generic level, this paper suggests a basic framework to analyse 'digital cities', defined here as *a set of web pages which are realised in the framework of a city (or a commune).*

From the specific analysis, it can be concluded from this sample of 37 websites that the cities and communes of the southern and central parts of Belgium appear to be privileged spaces for creating websites. The offers are numerous. Several actors can be involved in providing the sites: particularly, the initiator, the editor, the designer, the person or the body in charge of financing, and the partners in the furnishing of information. Observations about all these potential actors are very heterogeneous in the sample. Let us underline here, as a meaningful example, that the editors are, by order of declining frequency, the authorities of the city or commune (in 'official' sites), Internet providers (once in conjunction with a trade association), private individuals, non-profit associations, firms specialised in editing tourist sites, a university and a Young Economic Chamber. This example

reveals also the important role taken by private individuals and non-profit associations in the spontaneous emergence of 'digital cities'. The analysis of the sample underlines too that the private and public sectors frequently collaborate to provide the sites.

On the other hand, it seems that the studied websites are not very frequently visited.
No site in the sample has received funding from the European Union nor has invested in huge new infrastructure. Intranets are very rare and public access kiosks are really exceptional.
As to the information domains available on the sites, they are in order of declining frequency: promotion of the city or commune, address directories, administrative information, education, libraries, media (press and others) and economic announcements.

The interactivity of the sites (as appreciated by the interactive services, the offers of hosting and the communications) is generally very low.

These observations deserve various comments. First of all, they corroborate the importance of information highways taking root locally, at the level of the city or commune, as underlined in the Bangemann Report (1994 p. 24): " ...cities can have an extremely important role... ". It was foreseen in the same Report (p. 29) in Application Ten (City Information Highways - Bringing the information society into the home) that the providers should be various: "Who will do it? Groups of content and service providers (broadcasters, publishers), network operators..., system suppliers/integrators... Local and regional authorities, citizens groups, chambers of commerce and industry, will have very important roles to play". This study confirms also the multiplicity of actors to be involved in supplying digital cities. On the other hand, the observed cooperation between the private and public sectors should suit the Commission of the European Communities which has declared in its 'Action Plan' (Com (94) 347 final, p. 13): "The Commission will take a number of initiatives to stimulate ... public-private partnership". Let us add a last comment about the offers to assist with the websites devoted to a city/commune: the competence and the dynamism frequently showed by the private individuals and non-profit associations[18] when creating this kind of site should be considered and could interest public authorities.

The present analysis seems to indicate a current imbalance between such offers and the demand. This in turn points out the problem of access for all. According to ISPO (following an estimation of the LENTIC)[19], only 1.48 % of the Belgian population had Internet access in 1996!

Moreover, the apparently uncommon use of the analysed websites underlines that the question of the potential needs of the users and of the 'collective expectations' (see d'Iribarne 1997 p. 5) should be asked again, but this time at the level of digital cities. What is the real added value of the new offerings? And what will be the real added value of the future offerings

(video on demand, home shopping, etc.) such as is foreseen after huge infrastructure investments by the Bangemann Report?

The low values in the visitor counters also underlines that these websites are not well enough advertised.

Moreover, the low interactivity observed here is not an exception. Indeed, Graham & Aurigi (1997 p. 37) claim: " ... a common characteristic of many virtual towns seems to be a relative uni-directionality and a lack of opportunity for genuine interaction and discourse... ".

On the other hand, both the low interactivity and the poor observed use of the forums should give food for thought. Are users interested in more interactivity in a website dedicated to a town or a commune? Are citizens ready to become more active and to participate in public electronic debates? And finally, could 'digital cities' be a means to reinforce democracy, to activate local citizenship and to renew the practices of governing?

Acknowledgements

The author thanks Jacques Berleur, Dominique Dieng and Béatrice van Bastelaer for their comments and corrections.
This research was made possible with financial support of the Belgian Federal Office for Scientific, Technical and Cultural Affairs (OSTC), in the framework of the programme 'Pôles d'Attraction Interuniversitaires (PAI IV)'[20]

NOTES

1 In Belgium, the commune is the smallest administrative division. Inside big cities, communes often have their own website. On the other hand, built-up areas which are smaller than towns can also have their electronic site.
2 It corresponds to the concept of "'grounded' virtual cities" in the typology suggested by Graham & Aurigi (1997 p. 34).
3 But now, even "the majority of the 'Free-nets' in the United States have already provided themselves with Web sites". (Graham & Aurigi 1997 p. 34).
4 This term is well defined when applied to companies (see, for example, Breyer & Riley 1996). It is also frequently used about 'digital cities' but unfortunately without clear definition. In this case, it means something like 'a city's internal Internet'.
5 See, for example, http://www.cevi.be/cevi/internet/belg.html or http://www.online.be/bo/fr/surf/dossier/cybercities.
6 Frequently, the initiator can be identified only by discussing (via an e-mail exchange or a call) with somebody involved in supplying the website.
7 '.be' stands for Belgium.
8 by the content editor.
9 The column or the line corresponding to the official websites is shaded in all the tables (except the appendix).
10 Since September 1997, two other sites of the sample, Dinant (users.skynet.be/devuoli/dinant.html) and Mouscron (www.ping.be/~ping0193), have also become official (with the new addresses: www.dinant.be and www.mouscron.be). But at the time of the present analysis (see table 1), their respective editors were a Young Economic Chamber and a private individual.

11 Access providers or service providers.
12 This site is included in the 4 sites, already mentioned in table 2, for which the information about financing are confidential.
13 Of course, the Internet access network (BELNET) upstream of this server is totally financed by the OSTC.
14 See § 3.5.
15 The low figures observed in the sample seem to prove that they are not visited.
16 The break down which is adopted here was found in the site namur.be/citoyen and is explained in a booklet distributed by the city of Namur.
17 But, as a rule, the e-mail address of the website editor (which can be the authorities of the city/commune as a whole) or of the technical designer is available (see 3.4).
18 The importance of the associations in the process of the 'virtual cities' is also underlined by d'Iribarne (1997 p. 8).
19 See http://www.ispo.cec.be/esis/BEbasic.html
20 This paper is a synthesis of the results obtained: the full study (not published) consists of 50 pages of text, plus 60 pages of detailed tables.

REFERENCES

Bangemann M. et al (1994) *Europe and the global information society - Recommendations to the European Council,* CD-84-94-290-EN-C. EC, Brussels.

Beamish A. (1995) *Communities on-line: community-based computer networks.* Submitted to the Department of Urban Studies and Planning in Partial fulfillment of the Requirements of the Degree of Master in City Planning at the Massachusetts Institute of Technology, February 1995.
Available at: http://loohooloo.mit.edu/arch/4.207/anneb/thesis/tour.html

Breyer R. & Riley S. (1996,) *Switched and fast Ethernet*, second edition. Ziff-Davis Press.
Commission of the European Communities (1994*) Europe's Way to the Information Society. An Action Plan*. Com (94) 347 final, Brussels.

d'Iribarne A. (1997) Local democracy and information society: the citizens/users as ICNT co-conceptors. *Paper proposed for the INET'97 Conference*, 24-27 June 1997, Kuala-Lumpur.

Graham S. & Marvin S. (1996) *Telecommunications and the city - electronic spaces, urban places.* Routledge, London and New York.

Graham S. & Aurigi A. (1997) Virtual Cities, Social Polarization, and Crisis in Urban Public Space. *Journal Of Urban technology* 4(1) 19-52.

Nguyen Nam T. & Rossetti di Valdalbero D. (1997) Structures sociales et appropriation des technologies - Pistes de réflexions pour une sociologie des usages. Unpublished.

Pâques C. (1997) Les internautes municipaux à l'assaut du Web. *Le Soir* 16-17 août 1997 p.3.

Ville de Namur (1993) Des services tout en couleurs, guide administratif de la ville de Namur, 88 pp.

APPENDIX

Table A U.R.L. address of the sites included in the sample

Cities/communes	Site with their own domain name	Other sites
Ardenne		http://www.cdwet.be/ardenne
		http://www.promin.be/belvil/ardenne
Barvaux		http://www.promin.be/belvil/barvaux
Bastogne	http://www. bastogne.be	
Beauraing		http://www.promin.be/belvil/beauraing
Braine-l'Alleud	http://www. braine-lalleud.be	http://www. braine-lalleud.com
		http://www. braine-lalleud.org
Bruxelles		http://www.bru.com/bru
		http://www.a-1.be/site
Charleroi	http://www.charleroi.be	http://www.ping.be/cyberbubu
Chaudfontaine		http://www.cdwet.be/ chaudfon
Ciney		http://www.promin.be/belvil/ciney
Dinant		http://users.skynet.be/devudi/dinant.htm
Genappe	http://www. genappe.be	
Gendron		http://www.tornado.be/~di
Huy		http://www.cdwet.be/huy
Ittre		http://www.ittre.org
Jodoigne		http://ourworld.compuserve. com/homepages/de_meester_robert_jodoigne
Lasne	http://www.lasne.be	
Liège		http://www.plug-in-liege.com
Louvain-La-Neuve		http://www.ac.ucl.ac.be/LLN
		http://www.interweb.be/alilin
Mouscron		http://www.ping.be/~ping0193
Namur	http://www.namur.be/citoyen	http://www.ciger.be/ namur
		http://www.promin.be/belvil/namur
Nivelles	http://www.nivelles.be	http://www.nivelles.com
Spa		http://www.cdwet.be/spa
Tournai		http://www.honet.be/@t_home/tournai
Waterloo	http://www.waterloo.be	http://www.waterloo.org
		http://www.a-1.be/waterloo.com
Wavre		http://www.wavre.com (Wavre on-line)